

Log # M-411A



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: JUN 26 1997

In Reply Refer To: M-97-44 and -45

State Pilot Commissions
(address list attached)

On the evening of June 22, 1995, the Liberian-registered passenger vessel *Star Princess*, carrying 1,568 passengers and 639 crewmembers, was en route from Skagway to Juneau, Alaska, via the Lynn Canal under the direction of a southeast Alaska pilot. At 0142 on June 23, the *Star Princess* grounded on the submerged Poundstone Rock in Lynn Canal, about 21 miles north of Juneau. The vessel's bottom sustained significant damage on the starboard side, including the rupture of oil tanks, which resulted in the loss of at least 5 gallons of oil. The vessel was piloted to safe anchorage at Auke Bay, Alaska, (about 10 miles north of Juneau) to assess damage and debark passengers. No injuries or deaths resulted from this accident. The total cost resulting from required repairs and the delay before the vessel could return to service was estimated at \$27.16 million.¹

The National Transportation Safety Board determined that the probable cause of the grounding of the *Star Princess* was the pilot's poor performance, which may have been exacerbated by chronic fatigue caused by sleep apnea. Contributing to the accident was the fact that the pilot and the watch officers did not practice bridge resource management.

The Safety Board examined the possibility that fatigue, associated with previously undiagnosed obstructive sleep apnea (OSA), might have impaired the pilot's ability to safely navigate the *Star Princess* on the morning of the grounding. It was medically determined after the accident that the pilot suffered from OSA, a sleeping disorder. OSA can cause an individual to awaken repeatedly throughout a sleep period, often without being aware of having done so. This situation may have prevented the pilot's obtaining restful sleep, creating circumstances that may have caused fatigue.

¹For further information, read Marine Accident Report -- *Grounding of the Liberian Passenger Ship Star Princess on Poundstone Rock, Lynn Canal, Alaska, June 23, 1995* (NTSB/MAR-97/02).

The fact that the pilot suffered from a sleep disorder would likely affect any fatigue-based performance criteria. One sleep researcher found that the pilot fell asleep in an average of about 5 minutes when placed in a dark, quiet room. An individual who is not sleep deprived will, on average, require about 20 minutes to fall asleep under similar circumstances. Thus the less time a person needs to fall asleep from the 20-minute average, the more the individual is sleep deprived and in need of rest. In the case of the pilot, during postaccident testing sessions he fell asleep in about one-quarter the time required for rested individuals. OSA is a chronic disorder that is often present for years or decades prior to diagnosis. Since daytime sleepiness is almost uniformly present in patients who suffer from OSA, chronic fatigue is one of the hallmarks of the disorder. Therefore, the Safety Board concluded that the pilot was chronically fatigued as a result of OSA.

The pilot claimed that because he was unsure of what course the *Fair Princess* (another vessel in the vicinity) would take, he paid careful attention to the vessel. If such was the case, the pilot could have concentrated on the *Fair Princess* to the exclusion of maintaining a safe distance from Poundstone Rock. Focus on a particular stimulus to the exclusion of other critical data can be one effect of fatigue on performance. The pilot also stated that when he first felt the ship shudder upon grounding, he was not immediately sure as to the nature of the problem. Only when he moved to the starboard bridge wing and observed the buoy traveling down that side of the vessel did the pilot realize that he had struck Poundstone Rock. Not only should the pilot have been aware of the location of the buoy from transiting the area on previous occasions, he had for several miles been observing the buoy marking the rock. Under normal conditions, such an experienced pilot should have immediately deduced that he had not safely passed Poundstone Rock when he felt the vessel shudder. A fatigued pilot, however, might not be sufficiently alert to realize that he had grounded. Because the available data suggest that the pilot's performance was degraded consistent with the effects of fatigue, the Safety Board concluded that fatigue may have reduced the pilot's ability to appropriately assess and respond to the developing situation.

The Safety Board also evaluated the pilot's use of the antidepressant Effexor in the context of his performance on the accident morning. Besides the postaccident statements made by the pilot about his Effexor use, the Safety Board obtained and reviewed medical opinions concerning the pilot's use of this medication and what effect, if any, it may have had on his performance.

The pilot himself stated that while the medication tended to cause some minor physical side effects, these did not affect his ability to pilot the vessel. The physicians consulted by the Safety Board were in agreement that Effexor would have had no effect on the pilot's behavior. Their consensus was that the pilot was not impaired by his medication at the time of the accident, particularly given the low dosage of Effexor he was taking. Based on the unanimity of the professional opinions of all physicians consulted, the Safety Board concluded that the pilot's use of an antidepressant (Effexor) probably did not affect his performance.

While concluding that the pilot's use of medication was not causal or contributory to this accident, the Safety Board remains concerned about the possible effects of medication on pilot performance. The Alaska Board of Marine Pilots was not aware that the pilot had been regularly

taking the prescription medication Effexor, nor was the pilot required to provide this information to the agency. The pilot first provided the information during testimony following this accident.

Use of medication by operators in the transportation industry has been an issue in previous accidents the Safety Board has investigated. For instance, after its investigation into the collision of the towboat *Mauvilla* with a railroad bridge,² the Safety Board recommended to the U.S. Department of Transportation (DOT) that it should:

I-94-5

Require the modal operating administrations to develop and disseminate bulletins, notices, circulars, and other documents that call attention to the need for an employee reporting procedure concerning use of medication (over-the-counter and prescription) while on duty and that urge the transportation industry to develop and implement informational and educational programs related to this subject.

The DOT developed a statement for use by all operating administrations concerning the potential threat to public safety posed by the on-duty use of some over-the-counter and prescription medications by persons performing safety-sensitive duties, strongly urged employers to include appropriate information to address this issue in their employee training materials, and encouraged employers to reiterate to their employees the need to report use of such medications when required by applicable DOT rules or company policies. The DOT circulated this statement to all departmental drug and alcohol program managers, asking that it be made available throughout the regulated industries. As these efforts satisfied the intent of the recommendation, on October 26, 1995, the Safety Board classified Safety Recommendation I-94-5 "Closed--Acceptable Action."

During the *Star Princess* accident investigation, Safety Board representatives found that, in the marine transportation mode, the issue of medication reporting may not be as familiar with industry members as it could be. As marine pilots are individual contractors rather than employees of firms that may have medication reporting requirements, it would be helpful for them to be made aware of the possible effects that medications could have on their work performance and of the safety benefits provided by medication reporting policies.

Federal pilot licensing procedures require that pilots annually pass a physical examination that addresses vision, color sense, and general physical condition. The *Merchant Marine Personnel Physical Examination Report* (as revised in March 1995), used to conduct the examination, directs the examining physician to report what medications the pilot is taking.

At the State level, the medication reporting situation is less clear. The Alaska State medical certification procedure for pilot licensing does not specifically require a pilot to declare

²See Railroad/Marine Accident Report -- *Derailment of Amtrak Train No. 2 on the CSXT Big Bayou Canot Bridge near Mobile, Alabama, September 22, 1993* (NTSB/RAR-94/01).

whether he or she is taking medications. Other States' pilot licensing organizations also do not appear to require pilots to make full disclosure regarding medications they may be taking. Many medications have effects that could negatively affect the performance of persons with safety-sensitive responsibilities. The Safety Board has previously discussed the need for transportation employers to be aware that employees are taking medication so that employers can determine the potential effects of the medication on the employee's fitness for duty.³ While pilots are not "employees" but self-employed individual contractors, they nevertheless have safety responsibilities in marine transportation of valid concern to licensing authorities.

Therefore, the National Transportation Safety Board issues the following safety recommendations to the State pilot commissions:

Advise pilots about the effect of fatigue on performance and about sleeping disorders such as sleep apnea. (M-97-44)

Review, in consultation with experts in occupational health, your medical standards, guidelines, and examination forms to ensure that they require the disclosure and appropriate evaluation of the history or presence of any medical conditions, symptoms, or medication use that would affect an individual's fitness to pilot a vessel. (M-97-45)

The Safety Board also issued Safety Recommendations M-97-41 through -43 to the U.S. Coast Guard, M-97-46 and -47 to the Alaska Board of Marine Pilots, M-97-48 to the Southeastern Alaska Pilots Association, M-97-49 and -50 to the Alaska Coastwise Pilot Association, M-97-51 to the San Diego Bay Pilots Association, Inc., M-97-52 and -53 to Princess Cruise Lines, M-97-54 and -55 to the American Pilots' Association, and M-97-56 and -57 to the International Council of Cruise Lines.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is interested in any action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations M-97-44 and -45. If you need additional information, you may call (202) 314-6458.

³See, for example, Marine Accident Report -- *Grounding of the Panamanian Flag Passenger Carferry M/V A. Regina, Mona Island, Puerto Rico, February 15, 1985* (NTSB/MAR-86/02) and Railroad Accident Report-- *Derailment of Amtrak Train 87, Silver Meteor, Palatka, Florida, December 17, 1991* (NTSB/RAR-93/02/SUM).

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT, GOGLIA, and BLACK concurred in these recommendations.

By: 
Jim Hall
Chairman

State Pilot Commissions*

Mr. E. Robert Leatherberry
Chairman
Alabama State Pilotage Commission
Post Office Box 2188
Mobile, Alabama 36601

Mr. Chris Adams
President
State Board of Pilot Commissioners
World Trade Center
Suite 339
San Francisco, California 94111

Mr. Edward M. Archibald
Deputy Commissioner
Connecticut Department of Transportation
24 Wolcott Hill Road
Post Office Drawer A
Wethersfield, Connecticut 06109-0801

Captain Dick Buckaloo
Pilot Commissioner
14 Horknill Avenue
Lewes, Delaware 19958

Mr. Gary Maddox
Chairman
Board of Florida Pilot Commissioners
Department of Professional Regulation
1940 North Monroe Street
Tallahassee, Florida 32399-0773

Mr. Raf Biezenbos
Chairman
Savannah Pilot Commission
c/o Lanport, Inc.
124 Prosperity Drive
Savannah, Georgia 31407

Captain Fred Hoppe
Executive Director
Department of Consumer and Commercial
Affairs
Post Office Box 541
Honolulu, Hawaii 96809

Captain Donald J. Short
President
Board of River Port Pilots Commissioners
Post Office Box 848
Belle Chasse, Louisiana 70037-0848

Captain Martin Gould, Sr.
President
New Orleans - Baton Rouge Pilot
Commission
3900 River Road
Jefferson, Louisiana 70121

Captain Paul Vogt
Commissioner
Board of Commissioners of the Bar Pilots
for the Port of New Orleans
2955 Ridge Lake Drive
Suite 102
Metairie, Louisiana 70002

Mr. Edwin McDuffy
Chairman
Board of Harbor Commissioners
2 Portland Fish Pier
Suite 213
Marine Trade Center
Portland, Maine 04101

*Not including the Alaska Board of Marine Pilots, which is receiving a separate safety recommendation letter.

State Pilot Commissions (continued)

Mr. Frank O. Heinz
Chairman
State of Maryland
Public Service Commission
231 East Baltimore Street
Baltimore, Maryland 21202-3486

Captain Arthur M. Knight
Commission of Pilots
Commonwealth of Massachusetts
National Historic Park, Building 32
Charleston Navy Yard
Boston, Massachusetts 02129

Mr. Johnny S. Tillman
Board of Commissioners
Post Office Box 70
Pascagoula, Mississippi 39568

Mr. Ernest Conner
Executive Director
Portsmouth Port Authority
Noble Island
Portsmouth, New Hampshire 03802

Mr. Edward B. Pulver
Board of Commissioners of Pilots
Post Office Box 1022
Rahway, New Jersey 07065

Mr. S. Frasier Sammis
Board of Commissioners of Pilots
17 Battery Place
New York, New York 10004

Dr. W. P. Rabon
Chairman
Cape Fear River Navigation and Pilotage
Commission
110 North Caswell Avenue
Southport, North Carolina 28461

Mr. Frank D. Butchart
Chairman
Board of Maritime Pilots
State Office Building
Suite 507
800 NE Oregon Street, #15
Portland, Oregon 97232

Mr. George Shevlin
Chairman
Navigation Commission for the Delaware
River and Its Navigable Tributaries
Post Office Box 2649
Harrisburg, Pennsylvania 17105

Mr. Vernon Dunlap
State of Rhode Island and Providence
Plantations
State Pilotage Commission
22 Hayes Street
Providence, Rhode Island 02908

Captain Whitemarsh Smith III
Commissioner of Pilotage
Port of Charleston
Post Office Box 20096
Charleston, South Carolina 29413

Mr. Ned Holmes
Chairman
Port Commissioners
Post Office Box 2562
Houston, Texas 77252-2562

Mr. Robert T. Hassler, Jr.
President
Board for Branch Pilots
Post Office Box 359
Norfolk, Virginia 23501

Rear Admiral Chester A. Richmond, Jr.
USCG, Retired
Chairman
State of Washington Board of Port Pilotage
Commissioners
Colman Dock, Pier 52
801 Alaskan Way
Seattle, Washington 98104-1487

